

Children's Subjective Well-being: Socio-demographic Characteristics and Personality

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Abstract Over the past few decades, a large number of studies have been conducted to explain variations in subjective well-being (SWB). Most of these studies emphasised socio-demographic factors, which were consistently found to be able to explicate only a small amount of variation in well-being. To find a better explanation, researchers have recently focused on the personality of individuals. However, these studies are mainly based on adults. There is little evidence on how personality characteristics are related to children's SWB. This study aims to fill this gap by bringing together socio-demographic characteristics and individual personality within a single framework to explain variation in children's SWB. Data for this article were obtained from a national survey among 2,400 young people aged 10 to 15 from mainstream schools in England. A two-stage multiple regression analysis indicated that the socio-demographic characteristics in model 1 accounted for 15 % of the variation in SWB. Model 2, containing both socio-demographic and personality characteristics, explained 33.5 % of the variation, of which personality contributed to explaining additional 18.5 % variation. Overall the personality factor explained slightly more variation (3.5 %) in SWB compared to the socio-demographic characteristics. However, looking at the standardised regression coefficient value for each factor separately, it was observed that some socio-demographic factors (e.g., material deprivation, age) were more influential in children's SWB than some personality domains such as openness, extraversion and conscientiousness. These findings are discussed in the context of previous empirical studies and theories on SWB. Suggestions for future research are also put forward.

Keywords Subjective well-being · Children and young people · Personality · Socio-demographic characteristics · Material deprivation

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1 Introduction

Subjective well-being (SWB) refers to ‘a person’s cognitive and affective evaluations of his or her life’ (Diener et al. 2002, p. 63). It is a measure of the quality of life of an individual and of societies (Diener et al. 2003). Diener and Suh (1998) further suggest that SWB is one of the three major ways to assess the quality of life of societies, along with economic and social indicators. There has been a growing interest among academics, researchers, policy makers and practitioners in the subjective well-being of the general population and/or population subgroups, and a large number of studies have been conducted over the past few decades aiming to explain variations in subjective well-being.

Influenced by bottom-up theories (Diener 1984), researchers have emphasised situational factors in explaining variations in subjective well-being. Among the situational factors, socio-demographic factors appear to draw a lot of attention among researchers. For a detailed discussion on the relationship between socio-demographic factors and subjective well-being, see Ha and Kim (2013), Argyle (2001), Dolan et al. (2008) and Peir’o (2006). Results from previous studies suggest that age (Ha and Kim 2013; Blanchflower and Oswald 2008), income (Ha and Kim 2013; Diener and Biswas-Diener 2002; Easterlin 2001), gender (Gonzalez Gutierrez et al. 2005; Haring et al. 1984), education (Ha and Kim 2013; Dolan et al. 2008), marital status (Ha and Kim 2013; Diener et al. 2000; Myers 1999), ethnic background (Schorling et al. 1994) and employment status (Ha and Kim 2013; Di Tella et al. 2001; Lelkes 2006) are all significantly correlated with SWB.

Although these findings contributed to existing knowledge on SWB, researchers appear to be frustrated with the overall explanatory power of these socio-demographic factors as they were consistently found to be able to explicate only a small amount of variation (5 % to 10 %) in adults’ subjective well-being (Haring et al. 1984; Stock et al. 1983; Wood et al. 1989).

Being frustrated with these findings, researchers started looking for alternative explanation. Influenced by the top-down theories (Diener 1984), many researchers have turned their attention to structures within the person, particularly personality traits that determine how a person perceives events and circumstances, to explain SWB.

Psychologists use the term ‘Personality’ to refer to the differences between people on various characteristics. According to Allport (1961) personality is a dynamic organization, inside the person, of psychophysical systems that create the person’s characteristic patterns of behaviour, thoughts, and feelings. Most psychologists agree that one’s personality can be described by using several distinct traits, and one widely accepted set of such traits is the ‘Big-Five’ personality factors (see ‘measurement’ section below for further detail).

Although research on personality on its own has a long history in psychology, inclusion of personality in the study of SWB is considered as a big shift in well-being research. Diener et al. (1999) describe the shift from external elements to personal aspects as an important theoretical advance. This paradigm change has witnessed the development of a strand of literature in which personality is regarded as the strongest predictor of subjective well-being (for reviews, see Argyle and Martin 1991; DeNeve and Cooper 1998; Diener 1996; Steel et al. 2008). Well-being has been found to be negatively correlated with neuroticism (e.g., Costa and McCrae 1980; Tkach and Lyubomirsky 2006) and positively correlated with extraversion (e.g., Brebner et al. 1995; Ruiz 2005), agreeableness (e.g.,

Demir 2008; McCrae & Costa 1991), conscientiousness (e.g., Chamorro-Premuzic et al. 2007; Hayes and Joseph 2003) and openness (e.g., Haslam et al. 2009; Nave et al. 2008). Among these personality domains, extraversion and neuroticism have consistently been the strongest predictors of adult's well-being, accounting for up to half of the total reliable variance in the various measures of well-being (Furnham and Petrides 2003).

Parallel to this development on adults' SWB focusing on socio-demographic and personality characteristics, there has been a growing interest among researchers in children's subjective well-being (Ben-Arieh 2008; Ben-Arieh et al. 2001; Bradshaw et al. 2007; Cummins and Lau 2005; Fattore et al. 2007; Casas 1997; Casas 2011a; Huebner 1991a; Konu et al. 2002; Rees et al. 2010; McAuley et al. 2012; McAuley and Layte 2012) over the last few decades. In order to find explanation for variations in children's and young people's SWB, a number of studies (Rees et al. 2010; Huebner 1991b; Rees et al. 2012) have explored the influence of socio-demographic factors including age, gender, disabilities, learning difficulties, ethnic background, religious affiliation, family structure and family economic conditions.

Similar to findings from research on adults, these studies also observe that the socio-demographic characteristics are not able to explain much variation in children's and young people's overall well-being and its various domains. The percentage of variance explained by these factors ranged from 5 % to 10 % (Rees et al. 2010; Rees et al. 2012; Bradshaw et al. 2011; Bradshaw et al. 2010).

In this regard, a new development, influenced by research on adult's SWB, has been observed in recent years in which researchers appear to focus on psychological factors in explaining variation in young people's—mainly older group's—well-being. Studies show that SWB among adolescents is associated with self-esteem (Dew and Huebner 1994; Mowrer and Parker 2004) and internal locus of control (Ash and Huebner 2002; Dew and Huebner 1994).

Although in its early stage, some researchers on adolescents are also exploring the link between some dimensions of personality and SWB. For example, Vitterso (2001) analysed the relationship between emotional stability and extraversion on SWB among 264 Norwegian adolescents with an average age of 19, and found that emotional stability was a much stronger predictor of SWB. From a study among 212 high school students in the USA, Rigby and Huebner (2005) also observed that the personality characteristics of emotional stability, but not extraversion, was related significantly to adolescent life satisfaction. Similar findings have been revealed in other studies on youth (Huebner et al. 2004; Fogle et al. 2002; McKnight et al. 2002). Although these studies provide useful insights about the link between adolescents' personality and their subjective well-being, they did not include some other important personality dimensions - such as agreeableness, conscientiousness and openness—in their analysis. There is still a lack of research on the link between personality and SWB for younger groups of children and young people. More importantly, there is little evidence on the nature of the relationship between socio-demographic factors and children's and young people's subjective well-being after controlling the effects of personality and vice versa (i.e., the relationship between personality and SWB after controlling the effect of socio-demographic characteristics). This article aims to fill this gap by bringing both socio-demographic and personality characteristics within a single framework to analyse the variation in children's subjective well-being. It aims to address the following questions:

- How much of the variation in children's overall SWB can be explained by socio-demographic characteristics?
- How much additional variation in the SWB can be explained by personality characteristics?
- Which of the socio-demographic and personality characteristics have the largest effects on the SWB for children and young people?

It is hoped that this article will supplement the findings from previous studies on personality and SWB among adolescents, such as Huebner et al. (2004), Fogle et al. (2002), McKnight et al. (2002), Vitterso (2001) and Rigby and Huebner (2005), and fill the research gap on socio-demographic characteristics, personality and SWB among children and young people/adolescents in general.

2 Methods

2.1 Sampling and Data Collection and Participants

This article uses survey data obtained from an ongoing programme of research on children's subjective well-being undertaken by The Children's Society in collaboration with the University of York. The intention of the survey from which data were derived for the article was to include a representative sample of children and young people in four school years in mainstream schools in England. These were Year 4 in primary school, which includes children aged 8 and 9; Year 6—the last year in primary school—which generally consists of young people aged 10 and 11; and Years 8 and 10 in secondary school, consisting of age bands 12 to 13 and 14 to 15 respectively. The sampling strategy was a two-stage cluster. Samples were stratified by government office region and within each stratum schools were selected proportionate to their size, thus producing a nationally representative sample of secondary and primary schools.

A computerised and fully structured questionnaire was used for collecting final data. In the early stage of developing questionnaires, 36 children and young people aged 8 to 14 were consulted through six focus groups, balancing by gender. The results of these focus groups were used in designing a pilot questionnaire which was tested among nearly 1,000 young people aged 11 to 15 in June 2010. In turn, the results of the pilot study informed the decision to modify some questions in the final survey, which was conducted in late 2010 and early 2011. This survey was administered for The Children's Society by the National Foundation for Educational Research and included a representative sample of almost 6,000 children aged 8 to 15. However, the data used in this article were obtained from just over 2,400 young people aged 10 to 15, who specifically answered questions on personality characteristics, as well as other questions on, for example, subjective well-being and socio-demographic characteristics commonly asked to the children in other age groups in the survey.

2.2 Ethics

In developing and undertaking the survey, close attention was paid to ethical issues including risk of harm to young people and researchers. For example, all researchers

involved in conducting focus groups and initial data handling had received an enhanced Criminal Records Bureau check. The project received ethical approval from an ethics committee at the University of York.

2.3 Data Analysis

After cleaning the data, analysis was undertaken using Statistical Package for the Social Sciences (SPSS). For evaluating psychometric properties of scales, factor analysis and Cronbach's Alpha were calculated. A range of univariate, bivariate, and multivariate statistical techniques were used for analysing data. For univariate analysis, mean and standard deviation were used. For bivariate and multivariate analysis, correlation (Pearson and point-biserial) and multiple regression were used respectively.

2.4 Measures

2.4.1 Socio-Demographics

Under socio-demographic characteristics, young people's age and gender, disabilities, learning difficulties, ethnicity, country of birth, religious affiliation, family structure, and child poverty were considered.

School year group was used as a measure of age. The three school years observed in this study are year groups 6 (age 10–11 years), 8 (12–13 years), and 10 (14–15 years). School year was dummy coded and year 6 used as a reference group (coded 0). Gender was also dummy coded and 'Male' was used as a reference group (coded 0).

The young people were asked whether they would define themselves as disabled. Response categories were 'Yes', 'No', and 'Not sure'. A response to 'Not sure' was defined as missing. The rest were dummy coded and 'No' was used as reference group (coded 0).

In a separate question, they were asked whether they would say they had difficulties with learning. 'Not sure' was defined as missing and the response to 'Yes' and 'No' was dummy coded in which 'No' was used as a reference group (coded 0).

The young people were asked to classify their ethnic origin using classification categories based on those in the 2001 UK Census. Later on, six broader ethnic categories were developed: White, Mixed, Indian, Pakistani and Bangladeshi, Black and Others. Then ethnic groups were dummy coded in which 'White' was used as a reference category (coded 0).

In order to know whether the young people were born in the UK, they were asked 'In which country were you born?' They were provided with the response categories of 'UK', 'Other', and 'Not sure'. 'Not sure' was defined as missing and 'UK' and 'Other' were dummy coded. Born in the UK was used as a reference group.

Young people in the study were asked 'What would you say your religion is?' Broad response categories were None, Christian, Muslim and Other (Hindu, Jewish, Sikh, Buddhist and others). They were dummy coded with 'Christian' used as a reference category.

Young people were asked to identify which adults they lived with and from this information it was possible to construct categories of family composition including 'two-parent family', 'lone parent family', 'step family', and 'others'. Young people

living with ‘others’ were excluded from the analysis because of the small number of people in this group. The rest were dummy coded in which ‘two-parent family’ was used as a reference category.

2.4.2 Child Poverty

A number of measures have been developed over the years for measuring poverty. One of the commonly used methods is to collect data on income, set an equivalent threshold and count the number of children living in households below that threshold. Main and Bradshaw (2012) argue that asking adults (or in fact usually one adult) about household income is unreliable as it is neither a child-centric measure nor a valid representation of child poverty. As an alternative, Rees et al. (2010) asked children whether they received means-tested free school meals, and how many adults they had in their family in paid employment as measures of income poverty. They found weaknesses in these objective measures when comparing them with subjective measures of how children thought their family compared with others. It was observed that children, whatever their objective material situation, were overwhelmingly likely to describe their family as ‘about average’.

Observing the limitations of the existing measures of child poverty, Main and Bradshaw (2012) developed an index on child material deprivation. Although material deprivation has been previously used as a method for measuring child poverty (Bradshaw 2011), the measure was developed based on research with adults. Main and Bradshaw’s (2012) index is child-centric in the sense that it is developed with, and answered by, children. The index contains 10 items: pocket money, saving money, branded trainers, iPod or similar, cable or satellite TV, garden or similar, access to family car, clothes to fit in (with social peer groups), annual family holiday and monthly day trips. Children were offered three options for each item: ‘I have this’, ‘I do not have this but I would like it’, and ‘I do not have this and I do not want or need it’. The index is created by adding together the number of items lacked and wanted by respondents, resulting in a 0 to 10 scale with 0 indicating no deprivation and 10 indicating the highest level of deprivation possible within the index.

2.4.3 Personality

Development of the International Personality Item Pool (IPIP) (2013) is regarded as a real breakthrough for research on personality as it provides free access to items for measuring personality. IPIP’s ‘Big-Five’ (Goldberg 1990; Gosling et al. 2003) Factor Markers (Extraversion, Agreeableness, Conscientiousness, Emotional stability and Openness) are used widely as measures of personality. The IPIP has a several versions containing different numbers of items (20, 50, and 100 items). For this study, we piloted a mini version of IPIP’s Big-Five Markers containing 35 items.

A principal component analysis with oblique rotation (Direct oblimin) was carried out in the pilot data to examine the factor structure of the scale. Factor analysis identified that these items loaded under five factors. Further analysis of data suggested that the number of items could be further reduced to develop a shorter version of Big-Five Markers with 25 items (five items for each category), which we finally

used in this study (Table 1). The component correlation matrix among the factors ranges from was 0.05 to 0.37. The sum of the total variance of the 5 components is 58.99 %.

Table 1 Obliquely rotated component loadings for 25 personality items*

	Components				
	Agreeableness	Emo. stability	Extraversion	Openness	Conscientiousness
Love to help others	0.837				
Care about other people's feelings	0.828				
Am interested in people	0.754				
Think of others first	0.737				
Know how to comfort others	0.714				
Get stressed out easily		0.822			
Get irritated easily		0.796			
Change my mood a lot		0.747			
Often feel depressed		0.742			
Worry about things		0.715			
Start conversations			0.763		
Make friends easily			0.728		
Stay in the background			0.700		
Don't talk a lot			0.670		
Enjoy meeting new people	0.567		0.576		
Am interested in new ideas				0.765	
Am full of ideas				0.756	
Love to think up new ways of doing things				0.731	
Use a lot of different words				0.713	
Am quick to understand things				0.694	
Get chores done right away					0.776
Do things according to a plan					0.740
Make plans and stick to them					0.683
Like to tidy up					0.647
Pay attention to detail					0.623
Eigenvalues	6.74	2.87	2.16	1.70	1.28
Percentage of total variance	26.96	11.48	8.66	6.78	5.11
Number of items loaded highly	5	5	5	5	5

* Loadings > 0.55

Items with high factor loadings which are considered to constitute a component are highlighted in bold

Young people responded to each item on a five-point scale ranging from ‘strongly agree’ to ‘strongly disagree’. Internal consistency analysis of each sub-scale by Cronbach’s alpha ($\alpha=0.69$ for extraversion, $\alpha=0.80$ for agreeableness, $\alpha=0.72$ for conscientiousness, $\alpha=0.78$ for emotional stability, and $\alpha=0.79$ for openness) suggests a moderate to high level of reliability for each sub-scale. The theoretical score in each sub-scale ranges from 0 to 20, a higher score indicating greater level of personality aspect associated with that sub-scale, e.g., openness.

2.4.4 Subjective Well-Being

Over the past few decades, a wide variety of measures have been developed for measuring subjective well-being. Three of them gained popularity over the others: a single-item measure of happiness with life as a whole (Cummins and Lau 2005), a single-item Cantril’s ladder (Cantril 1965) and a multiple-item life satisfaction scale (Huebner 1991a). There is now evidence that the multiple-item measure of subjective well-being is more stable than the single item measure (Stock et al. 1982 in Diener 1984; Goswami 2009).

In this study, Huebner’s Students’ Life Satisfaction Scale (Huebner 1991a) has been used as a measure of subjective well-being. The scale contains seven items. However, a previous study (Rees et al. 2010) identified that two items (‘My life is better than most young people’s’, ‘I would like to change things in my life’) from the original scale did not work well among children and young people in England. Following the suggestion of that study, a slightly modified version of Huebner’s scale containing five items was used in this study. Scale items were as follows: (1) My life is going well; (2) My life is just right; (3) I wish I had a different kind of life; (4) I have a good life; (5) I have what I want in life. Young people were asked to respond to each item on a five-point scale ranging from ‘Strongly agree’ to ‘Strongly disagree’. The Cronbach’s Alpha of 0.85 indicates excellent consistency of the scale. The theoretical score in life satisfaction scale ranges from 0 to 20, a higher score indicating a greater level of satisfaction in life.

3 Results

3.1 Univariate Analysis

Table 2 presents descriptive analysis (percentage for categorical and mean for interval variable) of all variables in the study. Results from the analysis indicated that girls (61 %) outnumbered the boys (39 %) and that the average age of participants was 12.41 years old. Among the three year groups, participation from Year 8 (45 %) was higher than the two other groups of Year 10 (28 %) and Year 6 (27 %). Only a small number of young people (2 %) defined themselves as having disabilities. About one in seven young people defined themselves as having difficulties with learning.

In response to the question on ethnic background, most of the young people (about eight out of ten) defined themselves as White. There was a broad representation of minority ethnic groups, including 5 % of mixed ethnic origin, 2 % of Indian origin, 2 % of Pakistani and Bangladeshi origin, 5 % of Black African or African-Caribbean origin and 4 % of other ethnic origin. Around one in nine of the young people were

Table 2 Correlation matrix $\clubsuit$

	1	2	3	4	5	6	7	8	9	10	11	12
Dummy Year 8 (1)	1											
Dummy Year 10 (2)	-0.57	1										
Dummy Gender Female (3)	0.10 ***	-0.02	1									
Dummy Disabilities Yes (4)	-0.04 *	0.08 ***	-0.08 ***	1								
Dummy Learning Diff. Yes (5)	-0.06 **	0.03	-0.11 ***	0.31 **	1							
Dummy Mixed Ethnic Yes (6)	-0.01	-0.04 *	0.05 *	-0.03	-0.02	1						
Dummy Indian Yes (7)	-0.02	0.07 ***	0.03	-0.01	0.01	-0.03	1					
Dummy Bang. Pakist. Yes (8)	-0.04 *	0.04 *	-0.09 ***	0.11 ***	0.06 **	-0.03	-0.02	1				
Dummy Black Yes (9)	0.01	-0.05 **	0.06 **	0.02	-0.04 *	-0.05	-0.04 *	-0.04 *	1			
Dummy Other Ethnic Yes (10)	-0.03	0.05 *	0.03	0.09 ***	0.02	-0.04 *	-0.03	-0.03	-0.05 *	1		
Dummy UK born Yes (11)	-0.05 *	0.01	-0.01	0.06 **	0.04 *	0.07	0.08 ***	0.04 *	0.18 ***	0.27 ***	1	
Dummy Muslims Yes (12)	-0.06 *	0.05 **	-0.03	0.06 **	0.02	0.07	-0.03	0.65 **	0.02	0.06 **	0.03	1
Dummy Other Religion Yes (13)	-0.02	0.09 ***	-0.01	0.11 ***	0.10 ***	0.03	0.37 ***	0.01	-0.02	0.14 ***	0.13 ***	-0.06
Dummy No Religion Yes (14)	0.02	0.03	-0.10 ***	-0.01	0.03	-0.06 **	-0.12	-0.13	-0.19	-0.09	-0.15	-0.16
Dummy Lone Parent Yes (15)	-0.01	-0.02	-0.03	0.03	0.03	0.01	-0.02	-0.04 **	0.14 ***	-0.04	0.01	-0.05
Dummy Step Parents Yes (16)	-0.01	0.01	-0.03	0.01	0.01	-0.02	-0.03	-0.04	0.03	-0.04 *	0.03	-0.02
Deprivation index (17)	-0.10	-0.04	-0.03	0.12 ***	0.11 ***	-0.02	0.03	0.07 ***	0.15 ***	0.04	0.10 ***	0.01
Extraversion (18)	0.03	-0.05 **	0.04 *	-0.16 ***	-0.16 ***	0.06 **	-0.01	-0.02	0.03	-0.05 *	-0.04 *	-0.02
Agreeableness (19)	0.03	-0.12 ***	0.13 ***	-0.12 ***	-0.09 ***	0.01	0.03	-0.03	-0.01	-0.01	-0.04 *	-0.03
Conscientiousness (20)	0.01	-0.09 ***	-0.03	-0.10 ***	-0.10 ***	0.01	0.04 *	0.01	0.01	0.06	0.05 *	0.03
Emotional stability (21)	0.02	-0.01	-0.10 ***	-0.06 **	-0.16 ***	0.01	0.01	0.02	-0.03	-0.02	0.01	0.01
Openness (22)	0.03	-0.12 ***	-0.09 ***	-0.11 ***	-0.17 ***	0.02	0.01	-0.01	0.05 *	0.01	-0.01	-0.02
Life Satisfaction (23)	0.01	-0.15 ***	-0.07 ***	-0.16 ***	-0.14 ***	0.02	-0.04 *	-0.01	-0.06 **	-0.05 **	-0.05 *	-0.01
Mean (or percentage)	0.45	0.28	0.61	0.02	0.13	0.05	0.02	0.02	0.05	0.04	0.09	0.03
Standard deviation	0.50	0.45	0.49	0.15	0.34	0.21	0.15	0.15	0.22	0.20	0.28	0.18

Table 2 (continued)

	13	14	15	16	17	18	19	20	21	22	23
Dummy Year 8 (1)											
Dummy Year 10 (2)											
Dummy Gender Female (3)											
Dummy Disabilities Yes (4)											
Dummy Learning Diff. Yes (5)											
Dummy Mixed Ethnic Yes (6)											
Dummy Indian Yes (7)											
Dummy Bang. Pakist. Yes (8)											
Dummy Black Yes (9)											
Dummy Other Ethnic Yes (10)											
Dummy UK born Yes (11)											
Dummy Muslims Yes (12)											
Dummy Other Religion Yes (13)	1										
Dummy No Religion Yes (14)	-0.29	1									
Dummy Lone Parent Yes (15)	-0.02	0.06 **	1								
Dummy Step Parents Yes (16)	-0.04 *	0.07 **	-0.09 ***	1							
Deprivation index (17)	0.09	-0.04	0.09 ***	0.03	1						
Extraversion (18)	-0.03	-0.07 **	-0.05 *	0.01	-0.26 ***	1					
Agreeableness (19)	-0.05 *	-0.12 ***	0.01	-0.04	-0.16 ***	0.41 ***	1				
Conscientiousness (20)	-0.03	-0.13 ***	0.01	-0.05 *	-0.12 ***	0.17 ***	0.54 ***	1			
Emotional stability (21)	-0.04 *	-0.04 *	-0.03	-0.06 **	-0.18 ***	0.19 ***	0.03	0.11 ***	1		
Openness (22)	-0.02	-0.10 ***	0.01	-0.04	-0.15 ***	0.46 ***	0.61 ***	0.52 ***	0.02	1	
Life Satisfaction (23)	-0.07 **	-0.08 ***	-0.02	-0.08 **	-0.30 ***	0.36 ***	0.35 ***	0.38 ***	0.36 ***	0.38 ***	1
Mean (or percentage)	0.10	0.43	0.12	0.06	1.01	13.91	14.90	11.63	7.52	14.33	14.34
Standard deviation	0.30	0.50	0.32	0.24	1.51	3.46	3.17	3.79	4.16	3.49	3.82

♣ One tailed test; * $P < 0.05$; ** $p < 0.01$; *** $p < 0.001$

born outside of the UK. Slightly less than half of the young people (43 %) said that they did not have a religious affiliation, whereas almost the same number of young people (44 %) said they were Christian. Among the rest, 3 % were Muslim and 10 % were the followers of 'other religion' (Hindu, Sikh, Jewish, Buddhist and others). In terms of family structure, the majority of children (eight out of ten) lived with 'both birth parents'. Only one in eight young people lived with a 'lone parent', and one in sixteen lived with 'step parents'.

The average score of 1.01 in the deprivation index indicates that out of the possible ten items, on average they lacked only one item which they wanted. Therefore, overall the young people reported a relatively low level of deprivation. The young people scored on average 13.91 in the extraversion personality sub-scale, 14.90 in the agreeableness scale, and 11.63 in the conscientiousness scale. They also scored on average 7.52 and 14.33 in the emotional stability and openness scale personality sub-scale respectively. The average score of 14.34 suggests that in general the young people in this study reported to be satisfied in their lives.

3.2 Bivariate Analysis

The correlation matrix in Table 2 also presents the relationship of each pair of variables in the study. In interpreting results in this section, emphasis is given to the degree and nature of association of each independent variable (socio-demographic characteristics and personality) in the study with the dependent variable of life satisfaction. The association of other pairs of variables is largely used as part of the diagnostic testing for regression analysis (see multivariate analysis section below).

Older young people (Year 10), girls, young people with disabilities, young people with learning difficulties and those born outside of the UK appeared to have statistically significant lower life satisfaction. In terms of ethnic background, young people of Indian, Black and other ethnic origin had statistically significant lower life satisfaction.

Young people who did not follow any religion and those in the 'other' religious groups appeared to have statistically significant lower life satisfaction. Also, those living with step parents reported to have statistically significant lower level of satisfaction.

A higher level of material deprivation was found to be statistically significant when associated with lower levels of life satisfaction. Extraversion, agreeableness, conscientiousness, emotional stability and openness—all appeared to have a statistically significant relationship with life satisfaction. Those who scored high on each of these five personality variables appeared to have a higher level of life satisfaction.

Among those variables which had statistically significant relationships with young people's life satisfaction, gender, ethnic background, country of birth, religious affiliation and family structure all had a negligible association (values of correlation ranging from 0.04 to 0.08). Having correlation coefficient values within the range of 0.14 to 0.16, year group, disabilities and learning difficulties appeared to have only a small association with life satisfaction. However, material deprivation and all personality sub-scales—extraversion, agreeableness, conscientiousness, emotional stability and openness—had a moderate relationship with life satisfaction. In all these cases, correlation coefficients were within the range of 0.30 to 0.38.

3.3 Multivariate Analysis

The bivariate analysis above provided some initial insights about the nature and extent of the relationship between each socio-demographic and personality characteristic on young people's life satisfaction. In order to know their real relationship with life satisfaction, all these independent variables need to be examined simultaneously by running a multivariate analysis. This provides the opportunity to examine the association of each independent variable with life satisfaction while controlling the effects of other independent variables in the study. For this reason, multiple linear regression analysis is carried out.

Before running multiple regression analysis, diagnostic testing was performed. In the initial stage, results of the correlation matrix in Table 2 were used for checking the presence of multicollinearity in the dataset. The correlation coefficients of 0.65 (between Bangladeshi/Pakistani and Muslims) and 0.61 (between agreeableness and openness) gave an early indication of multicollinearity ($r \geq 0.60$) in the data. However, final decisions in this regard were made based on tolerance values. Tolerance values for these two pairs—as well as for all other pairs of independent variables—were far above the cut-off point of 0.10 (Cohen et al. 2003), which suggested that the data did not suffer from multicollinearity.

As part of seeking answers to the central question of this article, two models were tested under the multiple regression analysis. Model 1 included only the socio-demographic variables to explain variations in young people's life satisfaction. Model 2 included both socio-demographic and personality characteristics. Results in these two models were then compared.

Table 3 reports the results of the multiple regression analysis. It is observed from model 1 that young people's age, gender, disabilities, ethnic background (Black), religious affiliation (no religion), family structure (step parents) and material deprivation all have a statistically significant association with their life satisfaction. Conversely, young people's learning difficulties and country of origin do not have a statistically significant association with their life satisfaction.

Controlling the effect of each socio-demographic characteristic in the analysis showed that older young people, females, young people with disabilities, black young people, those living with step parents, those with no religious affiliation and those with a higher level of material deprivation had lower life satisfaction. Jointly, these socio-demographic characteristics explained 15 % of the variation in young people's life satisfaction. The standardised regression coefficients suggest that among those statistically significant factors, material deprivation, age and disabilities have the highest effects on young people's level of life satisfaction.

In addition to the socio-demographic characteristics used in model 1, model 2 also takes into account young people's personality to explain variations in their life satisfaction. When the effect of personality is controlled in model 2, young people's religious background and gender no longer contribute statistically significantly to explaining variations in their life satisfaction. However, age, disabilities, ethnic background (Black), family structure and material deprivation all contributed statistically significantly in explaining variations in life satisfaction even after taking into account the effect of personality.

Table 3 Regression analysis on life satisfaction by socio-demographic characteristics and personality

	Model 1			Model 2		
	B (SE)	Beta	Significance	B (SE)	Beta	Significance
Constant	17.62 (0.32)		0.000	8.23 (0.72)		0.000
Year Group (Year 6 Ref.)						
Year 8	-1.50 (0.29)	-0.22	0.000	-1.18 (0.26)	-0.17	0.000
Year 10	-2.31 (0.31)	-0.32	0.000	-1.68 (0.28)	-0.24	0.000
Gender (Male Ref.)						
Female	-0.48 (0.23)	-0.07	0.032	-0.06 (0.21)	-0.01	0.781
Disabilities (No Ref.)						
Disabilities Yes	-2.84 (0.96)	-0.10	0.003	-1.87 (0.85)	-0.06	0.028
Learning difficulties (No Ref.)						
Learning Diff. Yes	-0.64 (0.42)	-0.05	0.131	-0.03 (0.38)	-0.01	0.936
Ethnic background (White Ref.)						
Mixed Ethnic	-0.32 (0.57)	-0.02	0.571	-0.11 (0.51)	-0.01	0.822
Indian	-0.99 (0.65)	-0.05	0.128	-0.98 (0.58)	-0.05	0.090
Bangladeshi & Pakistani	2.32 (1.20)	0.09	0.055	1.43 (1.07)	0.06	0.180
Black	-1.30 (0.58)	-0.07	0.024	-1.38 (0.51)	-0.08	0.007
Other ethnic groups	-0.34 (0.52)	-0.02	0.512	-0.29 (0.46)	-0.02	0.536
Country of birth (UK born Ref.)						
Non-UK born	-0.33 (0.39)	-0.03	0.397	-0.41 (0.35)	-0.03	0.242
Religious affiliation (Christian Ref.)						
Muslims	-1.50 (0.91)	-0.08	0.101	-0.78 (0.81)	-0.04	0.337
Other Religion	0.19 (0.43)	0.02	0.665	0.20 (0.38)	0.02	0.606
No Religion	-0.62 (0.23)	-0.09	0.008	-0.14 (0.21)	-0.02	0.496
Family structure (Both parents Ref.)						
Lone Parent	0.22 (0.37)	0.02	0.547	0.37 (0.33)	0.03	0.257
Step Parents	-0.94 (0.44)	-0.07	0.034	-0.82 (0.39)	-0.06	0.038
Deprivation index	-0.71 (0.08)	-0.27	0.000	-0.44 (0.08)	-0.17	0.000
Extraversion				0.11 (0.03)	0.11	0.001
Agreeableness				0.09 (0.04)	0.07	0.052
Conscientiousness				0.09 (0.03)	0.09	0.006
Emotional stability				0.23 (0.02)	0.28	0.000
Openness				0.17 (0.04)	0.16	0.000
	R ² =0.166; Adjusted R ² =0.150; F=10.23; P=0.000; N=893			R ² =0.352; Adjusted R ² =0.335; F=21.44; P=0.000; N=893		

Results in model 2 further indicate that when the effects of young people's age, disabilities, ethnic background (Black), family structure and material deprivation are controlled, the personality characteristic of agreeableness does not contribute significantly. However, the personality characteristics of extraversion, conscientiousness, emotional stability and openness are statistically significantly related to young people's life satisfaction.

Comparing each standardised regression coefficient for both socio-demographic and personality factors in model 2, emotional stability appeared to have the highest effect on life satisfaction, with age and material deprivation having the second and the third highest effect respectively. Openness, extraversion, and conscientiousness appeared to have the fourth, fifth, and sixth highest effect on young people's level of life satisfaction.

When we compare the two models in terms of the amount of variation explained, model 1, describing socio-demographic characteristics only, explained 15 % of the variation in young people's life satisfaction. However, model 2, describing both socio-demographic and personality characteristics, explained in total 33.5 % of the variation in life satisfaction. Personality characteristics, therefore, explained an additional 18.5 % of the variation that was left unexplained by socio-demographic characteristics in model 1.

Overall the personality factors explained slightly more variation (3.5 %) in life satisfaction compared to the socio-demographic characteristics. However, looking at the standardised regression coefficient value for each factor separately, we observe that some socio-demographic factors (e.g., material deprivation, age) were more influential than some personality domains such as openness, extraversion, and conscientiousness.

4 Discussion and Conclusion

This study aimed to analyse variation in children and young people's subjective well-being by focusing on both socio-economic and personality factors. It also examined the relative effects of these factors on subjective well-being. For these purposes, two models were used. Model 1 included only socio-demographic factors: young people's age, gender, disabilities, learning difficulties, ethnic background, country of birth, religious affiliation, family structure and material deprivation. Model 2 contained both socio-demographic and personality factors, including extraversion, agreeableness, conscientiousness, emotional stability and openness.

Among the nine socio-demographic factors, young people's age, disabilities, ethnic background, family structure and material deprivation contributed significantly to explaining variation in children and young people's well-being. Similar to the findings from other countries (Currie et al. 2012; Casas 2011b), young people's subjective well-being appeared to get lower as their age increased. Older children reported to be less satisfied with the degree of freedom and autonomy (Rees, et al. 2010; 2012) they were allowed to exercise, restrictions which are linked to having lower level of life satisfaction (Ryff 1989; Deci and Ryan 2000).

This study identifies material deprivation as one of the major factors of children and young people's well-being. Previous studies (e.g., Main and Bradshaw 2012) also observed material deprivation as playing a crucial role in explaining variation in children and young people's well-being. Some qualitative research (e.g., Ridge 2002) also suggests that economic factors—mainly poverty—have a major influence on their well-being. Other studies (e.g., Bradshaw 2011; Rees et al. 2011) link family poverty to children's lower levels of well-being and educational participation and attainment, higher risks of social exclusion, worse housing and neighbourhood conditions and

poorer physical and mental health. Harju and Thorod (2011) also reported how children lacking an ordinary consumption of goods and not having the 'right' clothes leads to frustration, feelings of exclusion and fears of being bullied. This material deprivation and anxiety/strain account for deteriorating well-being (Fryer 1995).

Like a number of previous studies that examined the effects of disability on children and young people's well-being (Main and Bradshaw 2012; Rees et al. 2010; Rees et al. 2012), this study found that young people with disabilities reported to have lower well-being, even after controlling the influences of other socio-economic and personality factors. Young people with disabilities experience life situations differently. For example, they are reported to have lower self-esteem (Appleton et al. 1997), lower school satisfaction (Rees et al. 2010), are less likely to have close friends (Burchardt 1999) and are bullied more (National Children's Bureau 2007). These factors are found to be associated with lower level of well-being (Pyszczynski et al. 2004; Konu et al. 2002; Holder and Coleman 2009; Goswami 2012).

Previous studies have been inconsistent in their findings relating to the relationship between a young person's ethnic background and their well-being. Although the multivariate analysis in this study suggests black young people experience significantly lower levels of subjective well-being, Rees et al. (2010) did not find any statistical significance between these two variables. However, other studies (e.g., Bradshaw et al. 2011) have considered ethnic background as an important factor because of its statistically significant association with the well-being domains of family and neighbourhood.

Previous studies (Rees et al. 2010; Rees et al. 2012; Bradshaw et al. 2011) have also observed small but statistically significant associations between the structure of family in which the young people live and their level of well-being. There has been a substantial amount of research on links between family structure and outcomes for children and young people, much of it focusing on the short—and long-term impacts of parental divorce and separation. The broad picture that has emerged from this research is that, consistent with our findings above, there is a small but significant difference in 'outcomes' for children who experience parental divorce or separation compared to those children who grow up with both birth parents (The Children's Society 2009; Mooney et al. 2009). In this regard, the quality of relationships within various family structures might be an important factor as the children and young people living in step and lone parent families reported to be less satisfied in their family relationships compared to those living in a family with both birth parents (Bradshaw et al. 2011).

The results of the associations of these socio-demographic factors with children and young people's well-being can be linked to the bottom-up theory of subjective well-being (Diener, 1984). Diener et al. (1999) described bottom-up factors as external events, situations and demographics. From the bottom-up perspective there is a major influence of external life circumstances (e.g., material conditions, life events, socio-political contexts) on the subjective experience of individuals.

After controlling the effects of nine socio-demographic characteristics of the young people, agreeableness marginally missed being a statistically significant factor of children and young people's well-being in this study. In this regard, the personality sub-scales of extraversion, conscientiousness, emotional stability and openness were found to be associated significantly with their subjective well-being.

A number of theories can be used to explain the link between children and young people's personality characteristics and their subjective well-being. Instrumental theories (McCrae and Costa, 1991) posit an indirect link between personality and SWB through a choice of situations or experiences of life events. Similarly, Headey & Wearing's (1992) Dynamic Equilibrium Model also suggests that individuals with certain personalities are likely to experience certain types of events. For example, extraverts may be more likely than introverts to get married or get a high-status job, and displaying a higher level of conscientiousness would increase the probability of a person experiencing achievement situations—both of which are positively linked to SWB. Further, the model suggests that an emotionally stable person is less susceptible to negative situations and less likely to become depressed, which is linked to mental health and thus their subjective well-being.

A high level of openness to experience is associated with a broader range of experiences, whereas 'closed' people report fewer hobbies and a narrower behavioural repertoire (Little et al. 1992). Open people are characterized by a need to enlarge and examine their experiences (Costa & McCrae 1992; McCrae & Costa 1991), and to seek out opportunity for personal growth and development (Schmutte & Ryff 1997). Thus, as part of a broad engagement dimension (Olson 2005), openness to experience could lead people to have life experiences that facilitate SWB (McCrae & Costa 1991).

Also, the findings of this study on the association between personality and children and young people's well-being can be linked to the top-down model described by Diener (1984). Top-down theories of subjective well-being assume a global tendency (derived from stable personality traits) to experience life in a positive or negative way. Studies tested the hypothesis that the intrapersonal (affective and cognitive) characteristics of individuals determine their SWB (Brief et al. 1993; Feist et al. 1995). Theories postulate that two people in the same circumstances can evaluate their SWB in different ways. Results indicate that intrapersonal variables are stronger determinants of SWB than contextual factors (see Diener & Ryan 2009 and Diener et al. 1999 for a review). The top-down perspective has received support from empirical studies throughout the last few decades, placing personality and positive predisposition as main predictors of SWB (see Lucas 2008 for a review).

In summary, results of this study indicate that the socio-demographic characteristics of the young people explain slightly less than half of the total variation (15 % of 33.5 %) in children and young people's subjective well-being explained jointly by their socio-demographic and personality characteristics. Compared to some previous studies, the socio-demographic characteristics in this study explained almost 5 % more variation in the SWB of children and young people. This increase in explanatory power of socio-demographic factors might be the result of using a child-centric measure of poverty, such as the material deprivation index. Main and Bradshaw (2012), who developed this measure, argue that this measure is more promising than some of the conventional measures of child poverty used commonly in research with children and young people, such as household income, the number of adults in the household in paid work, and free school meal entitlement. The findings add value to some previous studies (e.g., Main and Bradshaw 2012) by providing further evidence

that child poverty is a significant factor of children and young people's well-being even after controlling the effect of their personality.

Young people's personality characteristics of extraversion, emotional stability, conscientiousness and openness explained an additional 18.5 % of the variation in SWB that was not explained by their socio-demographic characteristics of age, disabilities, ethnic background, family structure and material deprivation.

Overall, although young people's personality characteristics explained more variation in their subjective well-being, this study suggests that some aspects of socio-demographic characteristics (age and material deprivation) are more influential than some personality domains (e.g., extraversion, conscientiousness and openness). These findings suggest that both socio-demographic and personality factors play important roles in explaining variations in children and young people's subjective well-being. They also add to existing knowledge from previous studies (e.g., Vitterso 2001; Rigby and Huebner 2005) by providing evidence that along with extraversion and emotional stability other domains of personality, such as conscientiousness and openness, are vital for understanding the SWB of children and young people.

This study has some limitations that need to be acknowledged. **First**, it focuses only on general or overall subjective well-being. Along with overall well-being, researchers (Rees et al. 2010; Huebner 1991a, Cummins and Lau 2005) emphasise the importance of studying various domains of well-being e.g., family, friends, school, satisfaction with the local area for a better understanding of children's and young people's lives. Therefore, future studies need to look at how these socio-demographic and personality characteristics are related to each domain of subjective well-being.

Second, previous studies found life events (see Headey and Wearing 1989; Luhmann et al. 2012; Suh et al. 1996) and changes in young people's lives (e.g., changes in family structure, moving home—see Rees et al. 2010; Rees et al. 2012) are important factors in explaining their overall well-being. These variables are not included in this article. Future studies need to include them in analysing the relationships of socio-demographic and personality with children's and young people's subjective well-being.

Third, this study examines the effect of personality on children's and young people's subjective well-being, focusing on the 'Big-Five' personality measures. Although they are regarded as widely accepted measures of personality, they do not cover all domains of an individual's personality, for example, ('trait') self-esteem and locus of control (Rotter 1966). Future studies need to explore those aspects in analysing the effect of personality and socio-demographic characteristics on children's subjective well-being.

Fourth, a number of studies (see Fattore et al. 2007; Rees et al. 2012) have highlighted the importance of children's and young people's freedom to make choices and the degree of autonomy in their lives when explaining their overall subjective well-being. Both Ryff's (1989) six-dimensional model and Deci and Ryan's (2000) self-determination theory emphasise autonomy as a major component of psychological well-being. In future studies, young people's autonomy needs to be included in the analysis on personality and subjective well-being. This will allow us to test whether this psychological component has any influence on the relationship between personality and children's subjective well-being.

Fifth, this article could not examine the effect of some possible interaction effects of some personality sub-scales on subjective well-being. For example, Hotard et al. (1989) and Pavot et al. (1990) argued that it is possible to be both introverted and neurotic (emotionally less stable) which could further decrease one's happiness. Both Yik and Russell (2001) and Lynn and Steel (2006) observed a statistically significant interaction effect of these two factors on well-being. The explanatory power of the SWB model in both studies increased after including the interaction effects into the analysis. Future studies among children and young people need to explore the interaction effects of these two personality aspects on SWB.

Sixth, looking at Cronbach's alpha values for agreeableness, conscientiousness, emotional stability and openness, the level of reliability for the extraversion personality sub-scale was slightly lower than the others in this study. Future studies should attempt to improve the reliability of this scale by including other items available in the IPIP or by developing new items for the scale. Moreover, the newly developed material deprivation index (Main and Bradshaw 2012) needs to be further tested on other groups of young people to examine its external validity. Future studies can also improve the quality of the analyses of the relations between the variables by using structural equation modeling technique.

Seventh, there may be overlap between constructs. In particular, some of the items in the emotional stability scale could equally well appear in a well-being scale (e.g. positive/negative affect) or indeed in a mental health scale. So this overlap may cause an over-estimate of the influence of personality on well-being.

Eighth, socio-demographic and personality characteristics explained between them about one-third (33.5 %) of the total variation in children and young people's SWB. Other factors need to be explored and included in the analysis to increase the explanatory power of the model. Recent studies (Goswami 2012; Rees et al. 2012; Rees et al. 2010) have identified young people's experiences of being bullied as a major factor of their well-being, and so future studies should include this factor and examine whether it contributes to explaining an additional amount of variation in young people's SWB.

Finally, findings on the relationship between socio-demographic and personality characteristics with children's and young people's well-being in this study are based on a correlational design. The study, therefore, does not provide a causal link between socio-demographic and personality characteristics with SWB. There is a common assumption in the personality literature that personality is relatively stable. This may not be true for adolescents (for a review, see Pullmann et al. 2006; Prenoveau et al. 2011; Meeus et al. 2011) and, if it is no more stable than life satisfaction, then this casts further doubt on assumptions about causality or directions of relationships. There are also debates on causal order between personality and subjective well-being. For example, Cunningham (1988) and Isen (1987) have revealed that inducing pleasant moods can lead to greater feelings of sociability, which is a defining characteristic of the extraversion trait. Therefore it is likely that experiencing high levels of positive moods might induce greater sociability. As Diener et al. (2003) argued, researchers must focus attention on determining the causal direction of observed personality and SWB associations by developing strong theories about the processes underlying the relationship between them, as well as collecting longitudinal data from children and young people.

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